MCL-30K-SPD

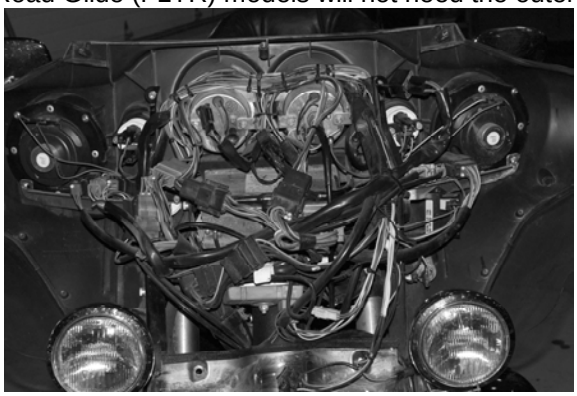
Thank you for purchasing the Dakota Digital MCL-30K-SPD gauge for your Harley Davidson Touring bike. This is designed to be a replacement for all touring models from 1996 – 2003. This is part of a six gauge package for touring models so you can add additional gauges as you choose.

IMPORTANT NOTE! **This gauge has an odometer preset option that is only available for the first 100 miles (160km) of operation. See "preset odometer" for instructions.**

INSTALLATION

First read and familiarize yourself with all of the components and this manual. The first step is to remove the seat and disconnect the negative side of the battery, as with any electronic install. Once the battery is disconnected you are ready to start.

Remove the outer fairing for FLHT models; this will vary from model to model, please follow the service manual to expose the wiring and gauges. Road Glide (FLTR) models will not need the outer fairing removed.



Ultra (FLHT) with outer removed

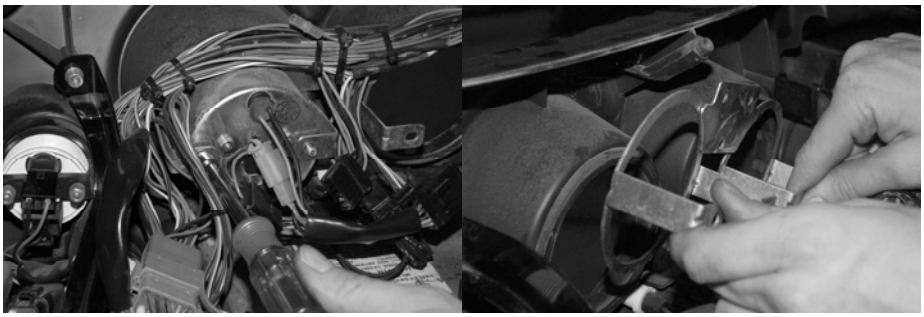
Remove Factory Gauges

Now you are ready to start unplugging and removing the original speedometer.

ULTRA FLHT (batwing fairings)

Remove the clamps that hold the Speed and Tach in place with a screw driver or wrench depending on application, and remove the gauges.

Remove speedo cable/unplug gauges



Remove nuts/screws and clamp to remove factory gauges

ROAD GLIDE FLTR

You will need to remove the speedometer and tachometer instrument bezel. To do this, remove two small screws on the left and right side of the bezel. Then lift up on the back of the bezel and slide the tab that is under the ignition switch out from under the switch cover, see photos below of ignition switch cover removed to show detail. Now unplug the gauge connections (cable where applicable). Remove switch, and unplug the idiot lights so the bezel can be completely removed for easier installation of the new gauges. Remove the clamp(s) that hold the gauges to the bezel and remove the gauges and grommets/gaskets.

Picture of tab (switch cover removed)

Bezel removed

Gauges/Grommets removed

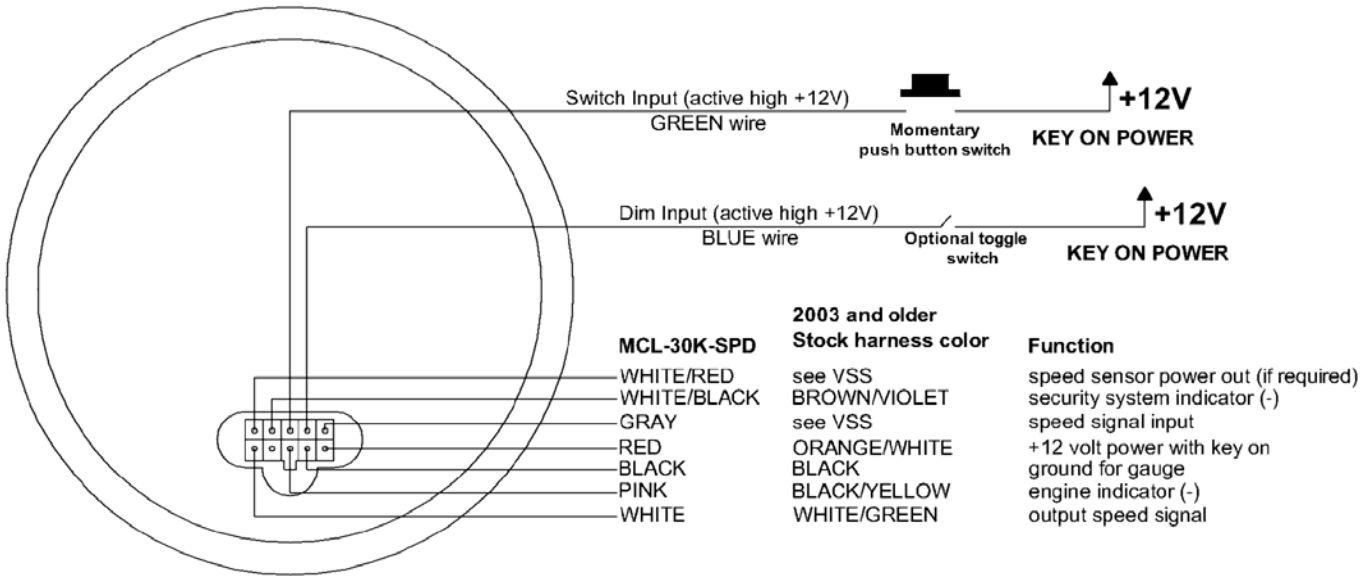
Install New Gauge

Note: This step is only for those with out a factory switch or cable drive applications since the switch was mechanical and attached to the speedometer. Now is a good time to install the function switch for cable drive applications, it can be hard to mount once the gauges are installed. Remove the rubber boot, insert the switch from the back of the fairing and then tighten the rubber boot on from the front.

Next you are ready to install the new gauges into the fairing. The new speedometer comes supplied with a new gasket and clamp. Install the gauge and secure using the supplied clamp and gasket. Be sure the alignment tab on the clamp lines up with the notches in the fairing. Some fairings may only have one notch, line up at least one tab on the clamp with the notch in the fairing, this will insure the gauge is centered and aligned correctly.

Speedometer

WIRING



First locate your speedometer connectors in the factory wiring harness that were unplugged from the original speed gauge. The wires needed for the Dakota Digital speedometer should all be found here. The factory connector can be cut off or the new wires can be spliced into the harness. Not all wires may be present on all years or models.

VSS wiring

For cable driven speedometers, you will also need to wire in a speed sensor. If you have provisions for a transmission mounted sender, use Dakota Digital SEN-1017. If not, use Dakota Digital SEN-1011; a cable driven speed sensor. The following table shows the wiring for each sensor type.

MCL-30K-SPD	SEN-1011	SEN-1017	Stock VSS
Splice into Black	Black	Black	Black
Gray	White	Green	White
White/Red	not used	Red	Red

If you are using the cable driven adaptor, you will also need to pull the speedometer cable from the front wheel and replace the cable nut with the supplied cable nut so your speedometer cable will thread onto the new sender. You have to take the cable off at the wheel so the nut can slide down and off the end of the cable and allow the new nut to slide on. After the nut has been replaced, the speedometer cable can be connected back to the wheel and also to the sender. Secure the sender with a zip tie and make sure there is no binding in the cable and that the cable has engaged fully into the sender.

Switch wiring

Using either the factory trip reset switch or the supplied push button switch, connect one wire from the switch to the MCL-30K-SPD green wire. The other wire from the switch should be spliced into the MCL-30K-SPD white/red wire. The white/red wire may be shared with the function switch and the SEN-1017 or stock speed sensor. If additional MCL-3K or MCL-30K-TCH gauges are being installed, the green wires on all of the gauges can be connected together to share the function switch.

Night dimming

The BLUE wire in the MCL-30K-SPD harness controls the dimming circuit. When this wire receives +12 volts, the gauge will dim to 50% intensity. This wire can be connected to a toggle switch, or to a Dakota Digital MCL-30K-TCH (the tachometer has a sensor that activates the dimming feature when ambient light is low).

FUNCTION SWITCH

The push button function switch mounted beside the speedometer allows access to all of the mileage and performance information. Pressing and releasing the function switch toggles through the different displays. Pressing and holding the switch for about 2 seconds will reset the current display. The display sequence is as follows:

SPEED MENU

000000	odometer mileage
A 000.0	trip meter mileage A
B 000.0	trip meter mileage B
S 0000	count down to service (if programmed)
======	Speedometer will show km/h (or MPH if metric)

PERFORMANCE MENU

HI 00	high speed recall
60 00.0	0-60mph time (0-100kph)
25 00.0	quarter mile time
25 00	quarter mile speed

The 0-60 and ¼ mile timers are zeroed by pressing and holding the switch while that timer is displayed. The timer will not restart until the speed reaches zero and you start driving again.

GAUGE SETUP AND CALIBRATION

The function switch, discussed above, is used to enter setup mode for all of the gauges. If you are only installing one or a couple Dakota Digital MCL-3K gauges, setup may seem a little strange since they are designed to work as a set. The first step in the setup procedure is to select which gauge you are going to adjust. Each gauge will either show a number or a label. If the gauge is showing a label then that gauge will be selected to enter setup. All of the other gauges will exit setup and allow the selected gauge to be changed. To get into setup, press and hold the function switch while turning the key on. Press and release the switch to advance through the menus below, when on the desired option, press and hold the switch to select setup for that particular gauge/function.

	speed	tach	oil psi	oil temp	fuel	volt
1st	- 1 -	CL	- 1 -	- 1 -	- 1 -	- 1 -
2nd	SPd	- 2 -	- 2 -	- 2 -	- 2 -	- 2 -
3rd	- 3 -	tCH	- 3 -	- 3 -	- 3 -	- 3 -
4th	- 4 -	- 4 -	PSI	- 4 -	- 4 -	- 4 -
5th	- 5 -	- 5 -	- 5 -	F or C	- 5 -	- 5 -
6th	- 6 -	- 6 -	- 6 -	- 6 -	FUL	- 6 -
7th	- 7 -	- 7 -	- 7 -	- 7 -	- 7 -	ULt
8th	- 8 -	- 8 -	- 8 -	- 8 -	- 8 -	- 8 -

FACTORY DEFAULT SETTINGS FOR SETUP MENUS

Below is a list of all of the factory gauge settings and what can be adjusted in the setup menus. You can calibrate and adjust the speedometer as often as you wish, however they should only need to be set once. The speedometer calibration will need to be performed to match the gauge for your bike.

Speedometer

Unit	MPH
Service Meter	OFF
Performance Menu	ON

SPEEDOMETER SETUP

Main Menu	Sub Menu	Description
SPd	Auto	select speed unit and auto calibrate speed
	AdJuSt	select speed unit and adjust calibrate speed
	S SEt	miles to service setting
	PErF	enable/disable performance readings
	-odoM	one-time odometer preset (only shown while odometer has less than 100 miles)

Until the speedometer is calibrated, the odometer display will show "PLEASE" "SEt" "SPEEd". This message can be cleared temporarily by pressing and holding the switch.

To enter the speedometer setup, press and hold the switch while turning the key on and starting the engine. Once the engine is running, release the switch. The speedometer will show "- 1-". Press and release the switch so that "SPd" is displayed. Press and hold the switch for about 3 seconds until " - " is displayed. Release the switch. The MPH display will show "SEt" and the odometer display will show "Auto". Press and release the switch to move through the different menus, press and hold the switch to select a menu option.

Note: The speedometer calibration and gear programming are the only functions that require you to hold the switch while starting the bike, and this is only if you are going to adjust the calibration since you will have to ride the bike. Some ignition systems may disrupt power to other circuits causing the gauge to reset, this is why you must hold the switch while starting if you are performing speedometer calibration. All other gauge functions and gauges can be set without running the engine.

SPEED CALIBRATION

There are two methods for calibrating the speedometer, Auto Cal and Adjust. Either one can be used. Auto Cal requires that you have one measured mile marked out (km for metric); this is the best method to start with if your speedometer needs a lot of correction. Adjust requires you to follow another vehicle going at a set speed, time your self over a mile to determine your speed, or use a hand held GPS with speed indication.

Auto Auto Cal

- Press and release the switch until "Auto" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will switch to "unit" and light up the current speed unit (MPH or km/h).
- Press and hold the switch to keep the current unit or press and release the switch to change the unit.
- Next the speedometer will display "CAL" and the message display will show zeroes. You should now begin driving the measured mile. The message display will count the number of pulses received from the sensor. The message display cannot be used to determine when a mile has been driven. Once you reach the end of your marked mile, press and release the switch again. The calibration is now done.

AdJuSt Adjust

- Press and release the switch until "AdJuSt" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The display will switch to "unit" and light up the current speed unit (MPH or km/h).
- Press and hold the switch to keep the current unit or press and release the switch to change the unit.
- Next the system will restart with "AdJuSt" on the message display. The speedometer will show the speed reading. Begin driving at a known speed. When the switch is pressed, the speedometer reading will begin increasing until the switch is released. The next time the switch is pressed, the reading will begin decreasing until it is released. When the speedometer is correct you can release the switch. The new calibration will be saved if no adjustments are made for 10 seconds.

PLEASE NOTE:

Common problems during calibration:

- VSS (vehicle speed sensor) wires should be isolated from the ignition system. Coils, plug wires, or tachometer signal wires routed near or with the VSS wire can cause many problems. If you are seeing **erratic speedometer operation**, **registering speed at a standstill**, or **speed changes with engine RPM**, please double-check your VSS wire and tachometer wire routing making sure the VSS wire is separated from any ignition system components.
- If your **speedometer registers '00'** all the time, the unit is not receiving a VSS signal, please double-check your sensor wiring and mounting. The speedometer cannot be properly calibrated until you are registering a stable, but possibly incorrect, speedometer reading.
- Please see **Speed sensor voltage checks** on the last page for assistance in checking your sensor.

(Speedometer Setup Continued)

S SEt *Miles to Next Service setup*

The service mileage is a countdown mile meter. The service mile display can be disabled or can be set to count down from 500 – 7500 miles. If the service mileage is enabled and it gets to 0 miles, it will display "S -dUE" each time the key is turned on. If the push button switch is pressed and held while "S XXXX" is displayed, the service miles will be reset to your preset.

- Press and release the switch until "S XXXX" is displayed, then press and hold the switch until " – " is displayed.
- Release the switch. The current setting will be displayed, "OFF" or a mileage from 500 – 7500.
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed.

PErF *Performance menu setup*

The performance readings can be turned on or off. When they are turned off the odometer will only toggle through the mileage readings.

- Press and release the switch until "PErF" is displayed, then press and hold the switch until " - " is displayed.
- Release the switch. The current setting will be displayed (on or oFF).
- Press and release the switch until the desired setting is displayed.
- Press and hold the switch until " - " is displayed.

odoM Odometer preset

The odometer can be preset by the customer within the first 100 miles. Once the odometer has more than 100 miles the menu option will no longer be displayed. Make sure you have first calibrated the speedometer and correctly selected the units to be either MPH or km/h first. The odometer will be set in the selected units. Once you have preset the miles you cannot change it again. **WARNING!!:** ***This only allows setting odometer to the <u>nearest mile</u>. <u>Do not use tenths!</u> For example a mileage of 65432.1 should be set to "065432" using this method. If the tenths digit is used, the odometer will read 10 times too high.***

- Press and release the switch until "-odoM" is displayed, then press and hold the switch until " - " is displayed.
- The current miles will be displayed with the left most digit flashing.
- Press and release the switch to increment the digit. Press and hold the switch to move to the next digit to the right.
- Continue until the right most digit has been set. Press and hold the switch and the speed display will show "no".
- Press and hold the switch while "no" is displayed to go back and continue changing the odometer display. Turn the key off to cancel any changes.
- Press and release the switch to change to speed display to "YES". Press and hold the switch while "YES" is displayed to save the current odometer reading.

Speedometer Troubleshooting guide.

Problem	Possible cause	Solution
Gauge will not light up	Red wire does not have power. Black wire is not getting a good ground. Gauge is damaged.	Connect to a location that has power. Connect ground to a different location. Return gauge for repair. (see instructions)
Gauge lights up, but speed will only show zero.	Gray wire is not connected properly. Speed sensor not grounded properly. Speed sensor is not being turned by transmission. Sensor is not sending a speed signal. Gauge is not calibrated	Check connection from gray wire to speed signal wire. Move ground to different location, preferable close to the speedometer ground. Check cable connection between sensor and transmission. Sensor can be tested by spinning the cable with a drill. Check for a damaged or malfunctioning speed sensor. Gauge must be recalibrated (see instructions).
PLEASE – SET – SPEED	Speedometer not calibrated	Gauge must be calibrated to your vehicle (see instructions)
Speed reading is erratic or jumps around.	Speed sensor wire is loose or broken. Cable is loose or broken. Poor ground connection. Ignition Interference	Check all wire connections and inspect wire for breaks. Check cable between sensor and transmission. Check ground connection on speedometer and sensor. Check for tachometer wires routed with VSS signal wires. Check for VSS signal wires routed near ignition coils Check for poor ignition system ground Use suppression spark plug wires
Speed reading is incorrect.	Gauge is not calibrated correctly.	Gauge must be calibrated (see instructions).
Gauge will not dim.	Blue wire (2-pin harness) is not connected correctly.	Check wiring connections. Blue wire should have 12 volts when tachometer is dim.
Gauge remains dim at all times.	Blue wire (2-wire harness) is getting power all all of the time.	Check wiring connections. Blue wire should have 0 volts when tachometer is bright.
Security indicator does not work.	Loose or incorrect connection to indicator wire.	Check that the appropriate indicator wire has about 0 volts when the it should be off and about 12 volts when the indicator should be on.
Engine indicator does not work.	Loose or incorrect connection to indicator wire.	Check that the appropriate indicator wire has about 12 volts when the it should be off and about 0 volts when the indicator should be on.

Speed sensor voltage checks. All checks should be made with the sensor connected to the gauge and the key on. Checks should be done with a voltmeter and not a test light. Checks for the 3-wire sensor should be made between each individual wire and ground.

3-wire sensor: Red wire should have 9-11 volts dc, slightly less than battery voltage, (sometimes +5V if supplied by factory harness)
Black wire should show ground, 0 volts dc at all times.
White wire should vary between 0 and 5 volts dc as the gear teeth, or a steel object passes by the sensor. Aluminum and Stainless Steel will not work with a Hall-effect sensor. This can be checked with the sensor mounted and spinning the rear tire slowly, or by removing the sensor and moving a steel object pass the face of the sensor.

2-wire sensor: Measure the voltage between the two sensor wires. With the wheel spinning the voltage should be about 1-10 volts ac (make sure the meter is set to AC volts and not DC volts for this check).

WIRING COLOR CODE FOR SPEEDOMETER:

Color on GAUGE	Stock harness color	Function
WHITE/RED	see VSS section	speed sensor power out (if required)
WHITE/BLACK	BROWN/VIOLET	security system indicator
GREEN	see SWITCH section	switch input
BLUE	none	night dimming
GRAY	see VSS section	speed signal input
WHITE	WHITE/GREEN	output speed signal
PINK	BLACK/YELLOW	engine indicator
BLACK	BLACK	ground for gauge
RED	ORANGE/WHITE	+12 volt power with key on

SERVICE AND REPAIR

DAKOTA DIGITAL offers complete service and repair of its product line. In addition, technical consultation is available to help you work through any questions or problems you may be having installing one of our products. Please read through the Troubleshooting Guide. There, you will find the solution to most problems. **Should you ever need to send the unit back for repairs, please call our technical support line, (605) 332-6513, to request a Return Merchandise Authorization number.** Package the product in a good quality box along with plenty of packing material. Ship the product by UPS or insured Parcel Post. Be sure to include the RMA number on the package, and include a complete description of the problem with RMA number, your full name and address (street address preferred), and a telephone number where you can be reached during the day. Any returns for warranty work must include a copy of the dated sales receipt from your place of purchase. Send no money. We will bill you after repair.

Dakota Digital 24 Month Warranty

DAKOTA DIGITAL warrants to the ORIGINAL PURCHASER of this product that should it, under normal use and condition, be proven defective in material or workmanship within 24 MONTHS FROM THE DATE OF PURCHASE, such defect(s) will be repaired or replaced at Dakota Digital's option.

This warranty does not cover nor extend to damage to the vehicle's systems, and does not cover removal or reinstallation of the product. This Warranty does not apply to any product or part thereof which in the opinion of the Company has been damaged through alteration, improper installation, mishandling, misuse, neglect, or accident.

This Warranty is in lieu of all other expressed warranties or liabilities. Any implied warranties, including any implied warranty of merchantability, shall be limited to the duration of this written warranty. Any action for breach of any warranty hereunder, including any implied warranty of merchantability, must be brought within a period of 24 months from date of original purchase. No person or representative is authorized to assume, for Dakota Digital, any liability other than expressed herein in connection with the sale of this product.

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